Gravure Printing Sector

EPA Region 2 Pollution Prevention Insights Bulletin

The U.S. Environmental Protection Agency is working to reduce releases of toxics from small businesses during extreme weather events (e.g., flooding and storm surge events). This bulletin highlights pollution prevention opportunities for increasing the success, competitiveness, and overall resilience of your business. Pollution prevention strategies which include the use of environmentally friendly products and practices, can reduce the risk of improper chemical management, limit liability, save money, and increase worker and customer satisfaction.

Did You Know?

Volatile organic compounds (VOCs) are the main toxic emissions from a gravure printing shop. Solvents in this sector are found in solvent-based paints and in cleaning liquids. The amount of VOCs released is directly related to the amount of solvent used. This can put all employees at risk for short and long -term health effects.

VOCs contribute to environmental problems. They are partly responsible for the formation of smog. They also contribute to the greenhouse effect. The liquids that contain VOCs can also affect the surrounding environment when they are accidentally drained and can pollute water and soil.

VOCs have several health risks associated with their use:

- Eye, nose and throat irritation
- Damage to liver, kidney, and central nervous system
- Headaches, loss of coordination, and nausea[1]

Introducing the right procedures for the press room and process changes to the machinery can capture up to 97% of these vapors. The switch over to water-based inks and reduction of the use of solvent-based inks and cleaning solutions can lead to a reduction of VOC emissions.

[1]EPA: VOC: http://www.epa.gov/iaq/voc.html

Additional Information:

EPA Region 2 Pollution Prevention Toxics Mitigation Program, http://www.epa.gov/region02/p2/other_p2_prog_init_actv.html

EPA Publication for Gravure Printing: http://www.epa.gov/ttn/chief/ap42/ch04/final/c4s09-2.pdf
Printer Pollution Prevention Program of Tulsa: https://www.cityoftulsa.org/COTlegacy/documents/BMPforprinter-final080107.pdf
Illinois Sustainable Technology Center: *http://www.istc.illinois.edu/info/library_docs/manuals/printing/p2pract.htm*
Design for the Environment: http://www.epa.gov/dfe/pubs/pdf/gravure.pdf

A Success Story

Constant Services, Inc. (CSI)
Fairfield, New Jersey

Switching to alternative solvents

CSI wanted to reduce their solvent use which would reduce the health risks to its employees from solvent exposure and provide environmental benefits.

The company started to use alternative solvents from the TRI-listed chemicals that they were using, cyclohexane and MIBK. This enabled them to eliminate emissions in the room where the strike off press is located. They eliminated 2,000 pounds per year of TRI-listed solvents.

They also began to use dry rags instead of solvent-dampened rags and found that this reduced solvent use and fugitive emissions. This process now relies on absorbing the solvent content already on the press to clean the parts. They estimate that they saved 1,100 pounds of solvent and $1,440.

CSI also introduced other pollution prevention practices such as, adding an on-site distillation unit for spent inks and dirty wash solvents, covering ink and solvent containers, creating a policy statement on pollution prevention practices, and increasing employee awareness by making this statement available to all employees.

CREDITS
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Gravure Printing Insights

Housekeeping and Maintenance

- Shop for lubricants with a longer life.
- Keep the press lubricated on a regular schedule.

Parts Cleaning and Sorting

- Lightly used shop rags can be used for non-critical cleaning.
- Other shop rags can be used for cleaning on the first pass. Switch over to water-based cleaners or water-based parts cleaning machines.
- If you must use solvent cleaners, then search for those that only use solvents with flashpoints higher than 140°F.

Recycling and Reuse

- Scrape excess ink from surfaces before wiping down.
- Try not to saturate rags in solvent so that they can be sent to certified cleaners and be reused.
- Mechanical wringers and centrifuges recover solvents from used rags; use this solvent for initial cleaning applications.
- Oil and ink can also be recycled.

Process Control

- Keep used shop towels in closed containers to reduce evaporation of solvents.
- Avoid lead, mercury, cadmium, or chromium-based pigments.
- Process modifications include placing a hood above the press, a partial enclosure around the press, more pickup vents, more floor sweep vents, or a combination of these.
- A total pressroom capture can also be beneficial.

Meeting the Customer Demands

- Run lighter colors first to reduce press clean up.
- Switch over to water based inks.
- Use water-based adhesives if possible.
- Try to use mechanical binding over chemical adhesives.

Invitation

You are invited to share your own success stories and additional best management practices with the EPA Pollution Prevention and Climate Change Section for consideration in our next bulletin!

Tell us what problem or challenge your small business faced, what steps you took to overcome it and how or why it resulted in a successful outcome. Provide details like the ones you see in this bulletin that explain how your actions resulted in cost savings, operating efficiency improvements, or other measurable successes.

Your story could be featured in our next bulletin to serve as an example for other small businesses.

For more information and to find out how YOU can submit your success story, send an e-mail to us at: Region2_PollutionPrevention@epa.gov or visit us at: http://www.epa.gov/p2/comments.htm

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USEPA Region 2,
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EPA United States Environmental Protection Agency

POLLUTION PREVENTION